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Drinking Behaviors and Health in Old Age

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DRINKING BEHAVIORS AND HEALTH IN OLD AGE

BY

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ABSTRACT

DRINKING BEHAVIOR AND PHYSICAL AND MENTAL HEALTH IN OLD AGE

by

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Alcohol abuse among the elderly population is rapidly becoming a widespread public health concern. As it goes undetected and undiagnosed in many within this age cohort, there is an increased need to further examine the effects of alcohol consumption on physical and mental health. This study investigated how and to what extent drinking behaviors affect physical and mental health in older people. Data came from the 2012 and 2014 Health and Retirement study, a nationally representative survey of Americans aged 51 and older. Our sample was restricted to people who participated in both waves of the survey from 2012 and 2014 (N=19,719). Drinking behavior was split into three groups: non-drinker, moderate drinker, and binge drinker. Three independent variables were examined to explore overall health of respondents: self-rated health, chronic conditions, and depression. Chi-squares and ANOVA testing were used to determine characteristics of binge drinkers in old age. OLS regression was used to examine how drinking behavior affected self-rated health and chronic conditions and logistic regression was used to explore how drinking behavior affected depression in old age.

We found that non-drinkers have the worst physical and mental health with a self-rated health score of 3.09 (*SD* = 1.07) and the highest number of chronic conditions (2.47; *SD* = 1.58). Moderate drinkers were found to be the most depressed (1.94, *SD* = 1.80). Binge drinkers were most likely to be Hispanic (26.16%), male (97.93%), unmarried (98.09%) elders. Additionally,

binge drinkers were the youngest group of respondents (60.88, *SD* = 7.98) and had the least amount of education (11.81 years, *SD* = 2.86). The findings of this study once again suggest further research into the affects of drinking behavior on health in old age is needed to better serve this population.

Introduction

Binge drinking is a problem for many people throughout the lifespan. It has been found to be a risk factor for a myriad of health and social problems, including cancers, depression, cirrhosis of the liver, car accidents, and violence (Tan, Denny, Cheal, Sniezek, & Kanny, 2015; Kanny, Yong, Brewer, Garvin, & Balluz, 2012). In recent years binge drinking has accounted for more than half of all alcohol related deaths in the United States (Centers for Disease Control, 2009). In 2010, binge drinking was the underlying cause of more than 40,000 deaths in the United States. In 2012, 4.2 million adults reported more than 100 million instances of alcohol-impaired driving. Additionally, 85% of alcohol-impaired driving incidents are committed by people who self-report binge drinking every year (Linde, Toomey, Wolfson, Lenk, Jones-Webb, & Erikson, 2016).

Most research on binge drinking tended to focus on young adults, particularly college students. It has been reported that young adults consume the greatest quantities of alcohol when drinking, when compared to other age groups (Carey, Scott-Sheldon, Carey, & DeMartini, 2007)). Up to 44% of college students partake in binge drinking during their undergraduate experiences, thereby classifying it as a public health problem for this age cohort (Nourse, Adamshick, & Stolzfus, 2017). Yet recent research has expanded its focus on broader age groups and found that frequency and quantity of alcohol use in the older population has been increasing (Blazer & Wu, 2009; Grant et al., 2004; Tan et al., 2015). In particular, medical professionals have become more aware of the dangers created by binge drinking in old age. Yet, until recently primary care physicians rarely utilized screening methods for binge drinking among this age group. Only 13% of primary care physicians report use of any screening tool for alcohol abuse

among the elderly (Trevisan, 2014). Alcohol abuse is more common than medical professionals diagnose and is rapidly increasing as a health risk for elderly American adults (Hunter & Gillen, 2006). Due to the widespread alcohol abuse among this age cohort, binge drinking among the older population is projected to triple by the year 2020 (Briggs, Magnus, Lassiter, Patterson, & Smith, 2011).

For elderly people, drinking could be just an expected activity related to aging. Natural stressors coexist with growing old, and an acceptable coping mechanism for these stressors is drinking (Akers, La Greca, Cochran, & Sellers, 1989). Particularly in old age increased loss, both through death and retirement, can cause increased stress and in turn, lead to a higher probability of binge drinking behaviors (Schnetzer, Shulenberg, & Buchanan, 2013). Retirement has been identified as a risk factor for alcohol abuse, especially for those who feel they did not retire as accomplished professionals (Callahan, 2009; Wang Steier, & Gallo, 2014). Nearly 20% of retired people report they have used alcohol as a coping mechanism for depressive symptoms (Callanan, 2009).

The negative influences of binge drinking on physical and mental health have been well demonstrated. Alcohol problems present themselves in a number of general ways, including falls, accidents, and a generally confused state of mind; additionally, poor hygiene, poor nutrition, and hypothermia are other negative health effects (Dar et al, 2006). Binge drinkers are also more likely to have impairments with activities of daily living (ADLs) and instrumental activities of daily living (IADLs) than those who do not drink alcohol (Culberson, 2006). As discussed earlier, however, binge drinking and its effects among the older population has been overlooked and relatively less explored. Alcohol abuse can go unnoticed in older adults because its symptoms can be confused for symptoms of a variety of old age disorders. For example, due

to the mimicry of symptoms for both diseases, alcohol abuse is often misdiagnosed as depression among the elderly (Dar, 2006).

The negative effects of binge drinking could be salient among the older population when compared to younger cohorts. In one study of elderly residential facilities, more than 50% of the occupants report health problems directly related to alcohol consumption (Briggs et al, 2011). Additionally, 4% of all medical visits by people within this age group are prompted by effects of alcohol use (Tredal, et al., 2013). Briggs and her colleagues (2011) demonstrated that binge drinking exacerbates a myriad of chronic conditions such as stroke, diabetes, heart disease, and high blood pressure. Any of these conditions combined with binge drinking can cause deleterious health effects and injury. In terms of mental health, the co-occurrence of both depression and alcohol abuse is significant among the elderly; up to 30% of people 65 and older who self-report they struggle with alcohol abuse also report the presence of one or more depressive symptom (Briggs et al., 2011; Cummings, Cooper, & Johnson, 2013).

Study Aims

Given this knowledge, this paper aims to investigate to what extent drinking behaviors influence physical and mental health among older adults. This study hypothesizes that moderate drinking leads to the most positive health outcomes, followed by non-drinking among older people. This paper fills the gaps related to elderly binge drinking in several ways. First, this study considered three categories of drinking behaviors, binge drinking, moderate drinking, and non-drinking, instead of looking at whether or not respondents are binge drinkers. Many studies have found that the relationships between alcohol consumption and health problems follow a J-shaped or U-shaped curve (Gunzareth, Faden, Zakhari, & Warren, 2004), demonstrating the positive effects of moderate drinking compared not only to binge drinking but to non-drinking.

Gunzareth and her team (2004) found that one to four alcoholic drinks every day actually reduced the risk of coronary heart disease (CHD), while consumption of five or more alcoholic drinks increased the risk of CHD. Therefore, comparing three categories of drinking behaviors should improve our understanding of the different influences of various levels of drinking. Second, most previous studies on the associations between drinking behavior and health were based on cross-sectional data; it is still unclear if poor physical and/or mental conditions lead to binge drinking or if binge drinking causes an increased number of physical and/or mental health conditions. This study used longitudinal data with two different time periods to analyze the effects of different levels of drinking on health. Lastly, this study examined various physical and mental health conditions including self-rated health, chronic conditions, and depression as results of alcohol consumption rather than focusing on single health outcome. There have been no studies looking at different health outcomes, and there is limited understanding on how different drinking behaviors affect various physical and mental health.

Methods

Data and Sample

Data came from the 2012 and 2014 Health and Retirement Study (HRS), a nationally representative, longitudinal study following more than 22,000 adults aged 51 and older. The HRS utilizes a detailed design, and oversampling is found among African American and Hispanic populations, and among Florida residents. The HRS is a publicly available dataset, and collection and production of HRS data comply with the requirements of the University of Michigan's Institutional Review Board (IRB). In order to examine to what extent drinking behaviors at the baseline affect physical and mental health at the follow-up, this study restricted its sample to respondents who participated in both 2012 and 2014 surveys.

Measures

Dependent variables

Three physical and mental health conditions were used as dependent variables: self-rated health, the number of chronic conditions, and depressive symptoms. All the dependent variables came from 2014, the follow-up wave. It should be noted that these health variables from 2012, the baseline, were also used as control variables in order to control for baseline health conditions.

Self-rated health was measured with the question: "In general, would you say that your health is excellent, very good, good, fair, or poor?" Respondents rated their current health status on a five-point scale ranging from excellent (=1) to poor (=5).

T*he number of chronic conditions* was measured as the total number of diagnosed chronic conditions respondents have, and it includes eight prevalent chronic conditions in old age such as blood pressure, diabetes, cancer, lung disease, heart disease, stroke, psychiatric problems, and arthritis.

Depression was measured based on an eight-item subset of the Center for Epidemiological Studies-Depression Scale (CES-D). The negative indicators on the scale measure the presence of symptoms, either all or most of the time: depression, everything is an effort, sleep is restless, felt alone, felt sad, and could not get going. The positive indicators measure the respondent's happiness and enjoyment of life. A summary score (range=0-8) was created; positive indicators were reversely coded so that a higher score reflects the presence of negative symptoms. CES-D scores greater than 4 were considered indicators of depression among respondents. It is important to note that within the descriptive analysis, CES-D scores are interpreted as the score from 0-8 and coefficients from the bivariate analysis are displayed in Table 1. In Models 1-4, the CES-D scores were recoded as a dichotomous variable where 0 = not depressed and 1 = depressed and

whether or not respondents were depressed was recorded. For this dichotomization the clinical threshold for depression based on CES-D scores was used. Any response with a CES-D score greater than 4 were considered depressed and represented as 1; scores less than 4 were considered to indicate an absence of depression and represented as 0. Additionally, for Models 1-4 a logistic regression was used and odds ratios for depression are displayed in Table 4.

Independent variables- Drinking behavior. This study categorized drinking behavior into three groups: non-drinker (0 drinks per week), moderate drinker (1~3 drinks for women and 1~4 drinks for men in one sitting), and binge drinker (more than 4 drinks for women and 5 drinks for men in one sitting). This follows the guidelines by the National Institute on Alcohol Abuse and Alcoholism (NIAA) for binge drinking among older adults (Cummings et al., 2013), which is different from the cut-off for binge drinking in may other studies focusing on younger population. In fact, there has been no consistent threshold for binge drinking. Binge drinking was previously defined as: no more than one drink per day (Culberson, 2006), or as no more than 14 drinks per week for a man and no more than seven drinks per week for women (Resnick et al., 2003). The NIAA guideline is relatively new, and there have been few studies using this criterion. Therefore, this study that determined binge drinking with the NIAA guideline could improve our understanding of binge drinking in old age.

Covariates: This study controlled for a series of sociodemographic covariates that have been found to be associated with various physical and mental health in old age. Respondents' age at the baseline survey and years of formal education were measured as a continuous variable. A dummy variable for gender (female=1) was created. Race/ethnicity was categorized into four groups: Caucasian, African American, Hispanic, and other race. Marital status was measured

through the use of a binary variable (where 1=married, cohabitating, or in a relationship; 0=without partner).

Analytical Strategy

This study performed the analyses in two parts. First, the bivariate analyses were completed using chi-square and one-way ANOVA test to examine different characteristics across three classifications of drinking behaviors in old age: non-drinker, moderate drinker, and binge drinker. Survey weights were applied to account for the unequal probability of subject selection due to purposeful oversampling of HRS. Second, ordinary least squares (OLS) regressions will be used to investigate to what extent and how different classifications of drinking behaviors in old age affect physical and mental health. In analysis Model 1, the health condition and drinking behavior were examined without controlling for any covariates. Model 2 analyzed health conditions and drinking behaviors while controlling for the sociodemographic attributes such as age, gender, race, marital status, and education. In addition, health conditions, self-rated health, chronic conditions, and CESD score, were added in Model 3. Finally, lagged health conditions in 2012 were controlled in Model 4.

Results

Descriptive Analysis

Table 1 details the descriptive statistics for the total sample (N = 19,719) as well as by drinking categorization. Of the complete sample, 3.06% were classified as binge drinkers, 33.68% of the sample were moderate drinkers, and 63.26% were non-drinkers. The average respondent was 67.74 (SD = 10.94; range 51-104 years) years old and 61.46% of the sample was married. Females made up 42.26%. The racial/ethnicity make-up of the sample was 64.67% white, 18.83% black, and 13.24% Hispanic, and respondents had 12.64 years of education on

average (*SD* = 3.22; range 0-17 years). The average respondent had a self-rated health score of 2.90 (*SD* = 1.10; range 0-5), 2.24 chronic conditions (*SD* = 1.54; range 0-8), and a CESD score of 1.54 (*SD* = 2.05; range 0-8).

Bivariate analyses found that socio-economic characteristics and health conditions were significantly different across three drinking groups. Binge drinkers were most likely to be Hispanic (26.16%), male (97.93%), unmarried (98.09%). In addition, they had the least amount of education, on average 11.81 years (*SD* = 2.86). Additionally, binge drinkers were on average the youngest group at 60.88 years old (*SD* = 7.98) and had the least number of chronic conditions (1.77; *SD* = 1.34). Respondents who classified as non-drinkers had the highest amount of chronic conditions (2.47; *SD* = 1.58); however, moderate drinkers had the highest CSED scores (1.94; *SD* = 1.80) indicating a higher number of depressive symptoms in this group of people.

Main Analyses

For the dependent variable of self-rated health (Table 2), model 1showed that moderate drinkers (Coef. = -0.365, $p < 0.001$) tended to have a better self-rated health than binge drinkers. This association disappeared in Model 2, which controlled for sociodemographic attributes. However, when other health conditions including lagged health variables were controlled, the results showed significant associations between moderate drinkers and better self-rated health (Coef. = -0.122, $p < 0.05$ in Model 3; Coef. = -0.075, $p < 0.05$ in Model 4). In order to compare moderate drinkers and non-drinkers, supplementary analyses were conducted with moderate drinkers as a reference group. It showed that non-drinkers had significantly worse self-rated health than moderate drinkers across all models (Model 1: Coef. =0.409, $p <.001$; Model 2: Coef. =0.224, $p <.001$; Model 3: Coef. =0.087, $p <.001$; Model 4: Coef. =0.028, $p <.05$).

The number of chronic conditions (Table 3) of moderate drinkers was not significantly different from that of binge drinkers. Instead, this study found significant associations between non-drinkers and the number of chronic conditions when compared with binge drinkers. The results showed that non-drinkers tended to have a greater number of chronic conditions in Models 1, 2, and 3 (Model 2: Coef. = 0.288, $p < 0.001$; Model 3: Coef. = 0.211, $p < 0.001$; Model 4: Coef. = -0.041, $p < 0.05$). Yet interestingly, the direction of the associations between drinking behavior and the number of chronic conditions changed when lagged health variables were controlled in Model 4 (Model 4: Coef. = -0.041, $p < 0.05$). The supplementary analyses with moderate drinkers as a reference group showed that non-drinkers tended to have a greater number of chronic conditions (Coef. = 0.186, $p < 0.001$), but this significant association disappeared in Model 4 when the lagged variable of chronic conditions were controlled.

Depression was the final dependent variable (Table 4) and used a logit regression for analysis. Models 1 and 2 presented moderate drinkers (OR = 0.546, $p < 0.001$ in Model 1; OR = 0.697, $p < 0.01$) were less likely to be depressed than binge drinkers. When health conditions including self-rated health and chronic conditions were controlled in Model 3, the results showed that both moderate drinkers (OR = 0.750, $p < 0.05$) and non-drinkers (OR = 0.784; $p < 0.05$) had less risk for being depressed compared to binge drinkers. However, these significant associations disappeared when the lagged variable for depression was controlled in Model 4. The supplementary analyses also found no significant differences in depression between moderate drinkers and non-drinkers.

Discussion

This study investigated drinking behaviors in old age, and to what extent drinking behaviors were associated with different health outcomes. Using two waves of data, this study

addressed potential reciprocal associations between drinking behaviors and health. Moreover, the binge drinking measure was based on the guidelines for older populations from the NIAA, which has been introduced in recent years and has not yet been used in many studies. Drinking behaviors were categorized into three groups such as non-drinkers, moderate drinkers, and binge drinkers, and this study compared these three-different drinking groups in terms of their physical and mental health. The hypothesis suggested that the health conditions of older adults engaging in binge drinking behaviors would be worse than those of both moderate drinkers and non-drinkers. However, the patterns of the association between drinking behavior and health varied depending on the three different health problems.

This study showed that the characteristics of the sample in different drinking behavior categories were significantly different. There was some similarity and differences in the characteristics of binge drinkers compared to the results from previous studies that mostly focused on young adults. Almost all respondents who were categorized as binge drinkers were male, which has been demonstrated in the studies focusing on young adults. Previous research has shown many times that men are significantly more likely to engage in binge drinking behaviors than women (Cummings, Cooper, & Johnson, 2013; Parikh, Junquera, Canaan, & Oms, 2015; Bryant & Kim, 2012; Breslow, Faden, & Smothers, 2003). In terms of race and ethnicity, this study found that Hispanic and Caucasian elders are the most likely to engage in binge drinking. This finding is consistent with previous results. Both Blazer and Wu (2009) and Bryant and Kim (2012) found that Hispanic and Caucasian people are more likely to binge drink.

Findings related to marital status were similar to prior research as well. In this study, only 1.91% of binge drinkers reported being married. Previous studies have linked people who are unmarried, divorced, or widowed with engaging in binge drinking behaviors (Parikh et al.,

2015). Aligning with these findings are those of Bartel et al. (2017) who found that binge-drinking behaviors are heavily influenced by the drinking behaviors of one's partner. Two of the more common examples of this phenomenon occur when men decrease their drinking behaviors because it does not align with the expectations of fatherhood and when women increase their drinking behaviors to engage in bonding time with their husbands (Bartel et al., 2017). Therefore, based on this suggestion it can be deducted that if a social drinker marries a binge drinker, the social drinker will most likely conform to the behaviors of their binge drinking partner; however, it is important to note that drinking behaviors of couples are most heavily influenced by that of their partner within the first five years of being together (Bartel et al., 2017),

When examining the dependent variable of self-rated health, there were a number of interesting findings. While the hypothesis stated at the beginning of the study regarding self-rated health was upheld; social drinkers were found to have a better self-rated health score than binge drinkers. In addition to these findings in support of the study, it was found that the self-rated health scores between binge drinkers and non-drinkers were not found to be significantly different. Previous research shows that binge drinkers and non-drinkers report worse self-rated health than social drinkers (Tsai, Ford, Li, Pearson, and Zhao, 2010; Balsa, Homer, Fleming, & French, 2008). This set of results goes to show how important it is that future studies use multiple categories of drinking when studying binge drinking. In using three categories of binge drinking within this study, it is evident that there are significant differences in self-rated health among different levels of drinking. As this study shows social drinkers reporting the best self-rated health among all three categories of drinking behaviors, it also shows that some drinking is in fact good for your overall health. Chronic and consistent alcohol misuse is associated with a

myriad of poor health conditions and it makes sense for respondents, who stopped drinking to mediate these health conditions, to have a low self-rated health. As for moderate drinkers, who can also be called social drinkers, they were found to have the best self-rated health. Their better perceived health may be due to their ability to interact with friends, family, and loved ones on a regular basis; social drinkers are appropriately named because of their alcohol consumption while participating in social activities, after all (Balsa et al., 2008).

When chronic conditions served as the dependent variable, a new perspective on the harmful effects of binge drinking among the elderly was offered. First, unlike the results in self-rated health, it was found that the number of chronic conditions between moderate drinkers and binge drinkers was not significantly different. Second, it was shown that non-drinkers tend to have more chronic conditions than binge drinkers. Interestingly, this association shifted in the other direction when the lagged variable, the number of chronic conditions at the baseline, was controlled. The "sick-quitter" hypothesis could be used here to explain this outcome. This suggests that life-long drinkers only quit drinking when they become ill and/or develop chronic conditions they did not previously have (Balsa et al., 2008). In other words, non-drinkers at the baseline may have quit drinking due to their existing conditions. The great number of chronic condition among respondents in this group may have come from their previous health condition. The change shown in the last model is also supported by the sick-quitter hypothesis. When their baseline chronic condition was controlled, binge drinkers showed a significantly greater number of chronic conditions, which means that they gained diagnoses of chronic conditions between the baseline and follow-up waves. This serves as proof of the damaging effects binge drinking has on the body and how quickly it can affect the overall health of binge drinkers.

Regarding depression, binge drinkers are more likely to be depressed than both moderate drinkers and non-drinkers before controlling for the lagged variable (i.e., depression at the baseline), which supports the hypothesis. One possible reason for this phenomenon is the self medication hypothesis which suggests people struggling with depressive symptoms use alcohol as a coping strategy, therefore becoming binge drinkers through their attempts at resolving symptoms (Bryant & Kim, 2013). However, when the lagged variable was controlled, all the significant effects disappeared. Cummings et al. (2013) found that nearly 20% of elderly people who are formally diagnosed with depression also struggle with alcohol misuse disorder. However, the associations between binge drinking and depression could be reciprocal. Bryant and Kim (2013) offer several reasons as to why and how alcohol use causes psychological distress, but specifically depression, for binge drinkers. The depressant effects from alcohol use and the psychological distress caused by binge drinking on a regular basis are both thought to precipitate mental health problems (Bryant & Kim, 2013). At the same time, individuals who are depressed are at risk of being binge drinkers because they tend to use drinking as a coping strategy. The findings of this study showed that drinking behaviors do not significantly influence depression in old age. Other factors such as self-related health and the number of chronic conditions were found to be more risk factors for depression in old age rather than drinking behavior.

Limitations and Implications

Some limitations of this study should be noted. Due to the limitation of the data, the drinking behavior across the lifespan of respondents was not taken into account. There was no consideration given for respondents who had engaged in binge drinking their whole lives when examining this pattern of behavior in conjunction with their overall health. For non-drinkers who

engaged in binge drinking up until old age, their own reports of self-rated health, chronic conditions, and depressive symptoms could be explained by their drinking behavior up until that point. As it was said, most non-drinkers only stop drinking because of a detrimental health condition. Thus, not accounting for the drinking behavior prior to the time of the survey does not allow for a comprehensive explanation of why non-drinkers have worse perceived health than binge drinkers. In addition, given the nature of self-reporting it is entirely possible that respondents under and/or over reported their levels of drinking. Incorrect self-reporting could have affected the outcome of all models of analysis. However, this again emphasizes the need for increased screening, services, and interventions for binge drinkers in old age.

This study confirms the negative effects of binge drinking and the positive effects of moderate drinking on physical health in older population, which has been rarely explored. No matter which drinking behavior one exhibits, it is clear there is a definitive lack of services available for elderly people who struggle with alcohol abuse (Briggs et al, 2011). Historically speaking, social work has only been brought to consult on a patient when the patient reported alcohol problems. There were no services sought if the medical practitioner believed alcohol abuse was a problem within the presenting case (Herring & Thom, 1997). Based on these services needed to better serve elderly binge drinkers, there is a well-defined need for further research on the topic.

References

Akers, R. L., La Greca, A. J., Cochran, J., & Sellers, C. (1989). Social learning theory and alcohol behavior among the elderly. *The Sociological Quarterly,* 30 (*4*). 625-638.

Balsa, A. I., Homer, J. F., Fleming, M. F., & Homer, M. T. (2008). Alcohol consumption and health among elders. *The Gerontologist,* 48 (*5*). 622-636.

Bartel, S. J., Sherry, S. B., Molnar, D. S., Mushquash, A. R., Leonard, K. E., Flett, G. L, & Stewart, S. H. (2017). Do romantic partners influence each other's heavy episodic drinking? Support for the partner influence hypothesis in a three-year longitudinal study. *Addictive Behaviors,* 69. 55-58.

Blazer, D. G. & Wu, L. T. (2009). The epidemiology of at-risk and binge drinking among middle-aged and elderly community adults: National survey on drug use and health. *American Journal of Psychiatry,* 166 (*10*). 1162-1169.

Breslow, R. A., Faden, V. B., & Smothers, B. (2003). Alcohol consumption by elderly Americans. *Journal of Studies on Alcohol,* 64 (*6*). 884-892.

Briggs, W.P., Magnus, V. A., Lassiter, P., Patterson, A., & Smith, L. (2011). Substance use, misuse, and abuse among older adults: Implications for clinical mental health counselors. *Journal of Mental Health Counseling, 33*.

Bryant, A. N. & Kim, G. (2012). Racial/ethnic differences in prevalence and correlates of binge drinking among older adults. *Aging & Mental Health*, 16 (*2*). 208-217.

Bryant, A. N. & Kim, G. (2013). The relation between frequency of binge drinking and psychological distress among older drinkers. *Journal of Aging and Health,* 27 (*7*). 1234-1257.

Callanan, C. (2009). Dying for a drink. *Nursing Standard, 24*(5). 24-25.

Carey, K. B., Scott-Sheldon, L. A., Carey, M. P., & DeMartini, K. S. (2007). Individual-level interventions to reduce college student drinking: A meta-analytic review. *Addictive behaviors*, *32*(11), 2469-2494.

Centers for Disease Control and Prevention. (2009). Sociodemographic differences in binge drinking among adults – 14 states, 2004. *Morbidity and Mortality Weekly Report,* 58(12). 301-304.

Culberson, J. W. (2006). Alcohol use in the elderly: Beyond the CAGE – Part 1 of 2: Prevalence and patterns of problem drinking. *Psychiatric Consultant, 61*(10). 23-27.

Cummings, S. M., Cooper, R. L., & Johnson, C. (2013) Alcohol misuse among older adult public housing residents. *Journal of Gerontological Social Work, 56.* doi: 10.1080/01634372.2013.790868

Dar, K. (2006). Alcohol use disorders in elderly people: fact or fiction? *Advances in Psychiatric Treatment,* 12. 173-181.

Grant, B. F., Dawson, D. A., Stinson, F. S., Chou, S. P., Dufour, M. C., & Pickering, R. P. (2004). The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991-1992 and 2001-2002. *Drug and Alcohol Dependence,* 74. 223-234.

Gunzareth, L., Faden, V., Zakhari, S., & Warren, K. (2004). National Institute on Alcohol Abuse and Alcoholism report on moderate drinking. *Alcoholism: Clinical and Experimental Research,* 28 (*6*). 829-847.

Herring, R., & Thom, B. (1997). Alcohol abuse in older people: the role of home carers. *Health and Social Care in the Community, 5*(4). 237-245.

Hunter, R. I., & Gillen, M. C. (2006). Alcohol as a response to stress in older adults: A counseling perspective. *ADULTSPAN*, *5*(2). 114-126.

Kanny, D., Yong, L., Brewer, R. D., Garvin, W. S., & Balluz, L. (2012). Vital signs: Binge drinking, prevalence, frequency, and intensity among adults – United States, 2010. *Centers for Disease Control and Prevention,* 61 (1). 14-19.

Linde, A. C., Toomey, T. L., Wolfson, J., Lenk, K. M., Jones-Webb, R., & Erikson, D. J. (2016). Associations between responsible beverage service laws and binge drinking and alcohol-impaired driving. *Journal of Alcohol and Drug Education, 60* (2). 35-54.

Nourse, R., Adamshick, P., & Stolzfus, J. (2017). College binge drinking and its association with depression and anxiety: a prospective observational study. *East Asian Archives of Psychology, 27*(1). 18-25.

Parikh, R., B., Junquera, P., Canaan, Y., & Oms, J. D. (2015). Predictors of binge drinking in elderly Americans. *The American Journal on Addictions*, 24. 621-627.

Tan, C. H., Denny, C. H., Cheal, N. E., Sniezek, J. E., & Kanny, D. (2015). Alcohol use and binge drinking among women of childbearing age – United States, 2011-2013. *Morbidity & Mortality Weekly Report,* 64 (37). 1042-1046.

Resnick, B., Perry, D., Applebaum, G., Armstrong, L., Cotterman, M., Dillman, S., …Parrish, J. H. (2003). The impact of alcohol use in community-dwelling older adults. *Journal of Community Health Nursing, 20*(3). 135-145.

Schnetzer, L. W., Schulenberg, S. E., & Buchanan, E. M. (2013). Differential associations among alcohol use, depression and perceived life meaning in male and female college students. *Journal of Substance Use, 18*(4). 311-319.

Tredal, I., Soares, J. J. F., Sundin, O., Viitasara, E., Melchiorre, M. G., Torres-Gonzales, F., … Barros, H. (2013). Alcohol use among abused and non-abused older persons aged 60-84 years: An European study. *Drugs: Education, Prevention, and Policy, 20*(2). 96-109.

Trevisan, L. A. (2014). Alcohol use disorders: Epidemiology, screening, and assessment issues. *Psychiatric Times, 31*(5). 1-4.

Tsai, J., Ford, E. S., Li, C., Pearson, W. S., & Zhao, G. (2010). Drinking and suboptimal self-rated health among adult drinkers. *Alcoholism: Clinical and Experimental Research,* 34 (*8*). 1465-1471.

Wang, X., Steier, J. B., & Gallo, W. T. (2014). The effect of retirement on alcohol consumption: results from the US Health and Retirement Study. *European Journal of Public Health, 24*(3). 485-489.

Table 1 – Descriptive Variables

Variables	**Total N = 19,719**	**Binge Drinker N = 19,719 (3.06%)**	**Moderate Drinker N = 19,719 (33.68%)**	**Non-Drinker N = 19,719 (63.26%)**	**Statistics**
Age	67.74 (10.94)	60.88 (7.98)	66.13 (10.30)	68.93 (11.14)	F(19,666) = 10.55***
Female	42.26%	2.07%	17.37%	22.82%	Chi2(1) = 593.29 ***
Race					Chi2(1) = 369.65***
White	64.67%	52.32%	73.26%	60.69%	
Black	18.83%	18.05%	14.97%	20.93%	
Hispanic	13.24%	26.16%	9.55%	14.58%	
Other	3.26%	3.48%	2.23%	3.79%	
Married	61.46%	1.91%	23.30%	36.26%	Chi2(1) = 256.19***
Education	12.64 (3.22)	11.81 (2.86)	13.67 (2.74)	12.13 (3.35)	F(19,620) = 543.42***
Self Rated Health	2.90 (1.10)	3.04 (1.04)	2.67 (1.00)	3.09 (1.07)	F(17,294) = 98.28***
Depression	1.54 (2.05)	1.82 (2.20)	1.94 (1.80)	1.71 (2.14)	F(18,581) = 140.51***
Chronic Conditions	2.24 (1.54)	1.77 (1.34)	1.85 (1.39)	2.47 (1.58)	F(19,715) = 402.07***

* p<0.05;
**p<.01;
***p<.001

Table 2 –Self-Rated Health

Self Rated Health	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Binge Drinking (Binge Drinker - Reference)				
Moderate Drinker	-0.356***	-0.149	-0.122*	-0.075*
Non-Drinker	-0.052	0.076	-0.035	-0.049
Age		0.005*	-0.003***	-0.001
Female		-0.069	-0.089***	-0.049***
Race (Reference - White)				
Black		0.204***	0.147***	0.077***
Hispanic		0.169***	0.214***	0.104***
Other		0.100	0.093*	0.044***
Married		-0.105***	0.006	0.001
Education		-0.060***	-0.039***	-0.019***
Self Rated Health				0.537***
CESD Score			0.094***	0.029***
Chronic Conditions			0.218***	0.099***
Constant	3.043	3.270***	2.928***	1.438***
R2	0.033	0.127	0.317	0.500
N	17,299	17,214	16,487	16,472

* <.05 ** <.01 ***<.001

Table 3 – Chronic Conditions

Self Rated Health	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Binge Drinking (Binge Drinker - Reference)				
Moderate Drinker	-0.356***	-0.149	-0.122*	-0.075*
Non-Drinker	-0.052	0.076	-0.035	-0.049
Age		0.005*	-0.003***	-0.001
Female		-0.069	-0.089***	-0.049***
Race (Reference - White)				
Black		0.204***	0.147***	0.077***
Hispanic		0.169***	0.214***	0.104***
Other		0.100	0.093*	0.044***
Married		-0.105***	0.006	0.001
Education		-0.060***	-0.039***	-0.019***
Self Rated Health				0.537***
CESD Score			0.094***	0.029***
Chronic Conditions			0.218***	0.099***
Constant	3.043	3.270***	2.928***	1.438***
R2	0.033	0.127	0.317	0.500
N	17,299	17,214	16,487	16,472

* <.05 ** <.01 ***<.001

Table 4 – Depression – Odds Ratio

Depression	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Binge Drinking (Binge Drinker - Reference)								
Moderate Drinker	0.546	***	0.697	**	0.750	*	0.771	
Non-Drinker	1.009		0.975		0.784	*	0.805	
Age			1.009	***	0.994	**	1.006	*
Female			1.077		1.074		1.082	
Race (Reference - White)								
Black			1.209	***	1.026		1.126	
Hispanic			1.312	***	1.287	***	1.295	***
Other			1.304	*	1.227		0.969	
Married			0.725	***	0.871	**	1.055	
Education			0.926	***	0.968	***	0.988	
Self Rated Health					1.477	***	1.238	***
CESD Score							1.568	***
Chronic Conditions					1.194	***	1.155	***
Constant	0.298		0.358	***	0.094	***	0.019	***
R2	0.012		0.047		0.160		0.256	
N	17,313		17,228		17196		16483	

* <.05 ** <.01 ***<.001